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12	169	(image adj segmentation) and cluster and detect	USPAT; US-PGPUB	2004/09/24 17:27
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1 **Automated segmentation of skin-tone regions in video sequences**
Farrukh, A.; Ahmad, A.; Khan, M.I.; Khan, N.;
Students Conference, ISCON '02. Proceedings. IEEE , Volume: 1 , 16-17 Aug. 2002

Pages:122 - 128 vol.1

[Abstract]   [PDF Full-Text (442 KB)]   **IEEE CNF**

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2 **Two channels fuzzy c-means detection of multiple sclerosis lesions in multispectral MR images**
Ardizzone, E.; Pirrone, R.; Gambino, O.; Peri, D.;
Image Processing. 2002. Proceedings. 2002 International Conference on , Volume: 2 , 22-25 Sept. 2002
Pages:II-345 - Ii-348 vol.2

[Abstract]   [PDF Full-Text (493 KB)]   **IEEE CNF**

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3 **A neural network for unsupervised categorization of multivalued input patterns: an application to satellite image clustering**
Baraldi, A.; Parmiggiani, F.;
Geoscience and Remote Sensing, IEEE Transactions on , Volume: 33 , Issue: 2 , March 1995
Pages:305 - 316

[Abstract]   [PDF Full-Text (1120 KB)]   **IEEE JNL**

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4 **Automatic segmentation of MR images based on adaptive anisotropic filtering**
Ardizzone, E.; Pirrone, R.; Gambino, O.;
Image Analysis and Processing, 2003.Proceedings. 12th International Conference

on , 17-19 Sept. 2003
Pages:283 - 288

[Abstract]   [PDF Full-Text (395 KB)]   **IEEE CNF**

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1 Second-generation image coding: an overview
M. M. Reid, R. J. Millar, N. D. Black
March 1997 **ACM Computing Surveys (CSUR)**, Volume 29 Issue 1

Full text available: 📄 pdf(12.23 MB)

Additional Information: full citation, abstract, references, index terms, review

This article gives an overview of a diverse selection of currently used second-generation image coding techniques. These techniques have been grouped into similar categories in order to allow a direct comparison among the varying methods. An attempt has been made, where possible, to expand upon and clarify the details given by the original authors. The relative merits ans shortcomings of each of the techniques are compared and contrasted.

Keywords: MRi, compression, image coding

2 Data clustering: a review
A. K. Jain, M. N. Murty, P. J. Flynn
September 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 3

Full text available: 📄 pdf(636.24 KB)

Additional Information: full citation, abstract, references, citings, index terms, review

Clustering is the unsupervised classification of patterns (observations, data items, or feature vectors) into groups (clusters). The clustering problem has been addressed in many contexts and by researchers in many disciplines; this reflects its broad appeal and usefulness as one of the steps in exploratory data analysis. However, clustering is a difficult problem combinatorially, and differences in assumptions and contexts in different communities has made the transfer of useful generic co ...

Keywords: cluster analysis, clustering applications, exploratory data analysis, incremental clustering, similarity indices, unsupervised learning

3 Fuzzy logic based non-parametric color image segmentation with optional block processing
Naoko Ito, Yoshihisa Shimazu, Teruo Yokoyama, Yutaka Matushita
February 1995 **Proceedings of the 1995 ACM 23rd annual conference on Computer science**

Full text available: 📄 pdf(920.20 KB)   Additional Information: full citation, references, citings, index terms

4 A survey of image registration techniques
Lisa Gottesfeld Brown
December 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 4

Full text available: 📄 pdf(5.20 MB)   Additional Information: full citation, abstract, references, citings, index terms, review

Registration is a fundamental task in image processing used to match two or more pictures taken, for example, at different times, from different sensors, or from different viewpoints. Virtually all large systems which evaluate images require the registration of images, or a closely related operation, as an intermediate step. Specific examples of systems where image registration is a significant component include matching a target with a real-time image of a scene for target recognition, mon ...

Keywords: image registration, image warping, rectification, template matching

5 Computational strategies for object recognition
Paul Suetens, Pascal Fua, Andrew J. Hanson
March 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 1

Full text available: 📄 pdf(6.37 MB)   Additional Information: full citation, abstract, references, citings, index terms, review

This article reviews the available methods for automated identification of objects in digital images. The techniques are classified into groups according to the nature of the computational strategy used. Four classes are proposed: (1) the simplest strategies, which work on data appropriate for feature vector classification, (2) methods that match models to symbolic data structures for situations involving reliable data and complex models, (3) approaches that fit models to the photometry and ...

Keywords: image understanding, model-based vision, object recognition

6 On face detection in the compressed domain
Huitao Luo, Alexandros Eleftheriadis
October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Full text available: 📄 pdf(948.31 KB)   Additional Information: full citation, abstract, references, index terms

We propose a fast face detection algorithm that works directly on the compressed DCT domain. Unlike the previous DCT domain processing designs that are mainly based on skin-color detection, our algorithm analyzes both color and texture information contained in the DCT parameters, therefore could generate more reliable detection results. Our texture analysis is mainly based on statistical model training and detection. A number of fundamental problems, e.g., block quantization, prepro ...

Keywords: *DCT, JPEG, MPEG, face detection*

7 Omni-face detection for video/image content description
Gang Wei, Ishwar K. Sethi
November 2000 **Proceedings of the 2000 ACM workshops on Multimedia**

Full text available: 📄 pdf(1.33 MB)   Additional Information: full citation, abstract, references, citings, index terms

An omni-face detection scheme for image/video content description is proposed in this paper. It provides the ability to extract high-level features in terms of human activities rather than low-level features like color, texture and shape. The system relies on an omni-face detection system capable of locating human faces over a broad range of views in color images or videos with complex scenes. It uses the presence of skin-tone pixels coupled with shape, edge pattern and face-specific features ...

Keywords: content-based retrieval, face detection, image annotation, side-view faces, skin-tone filtering

8   Efficient algorithms for geometric optimization
Pankaj K. Agarwal, Micha Sharir
December 1998 **ACM Computing Surveys (CSUR)**, Volume 30 Issue 4

Full text available: pdf(577.74 KB)   Additional Information: full citation, abstract, references, citings, index terms

We review the recent progress in the design of efficient algorithms for various problems in geometric optimization. We present several techniques used to attack these problems, such as parametric searching, geometric alternatives to parametric searching, prune-and-search techniques for linear programming and related problems, and LP-type problems and their efficient solution. We then describe a wide range of applications of these and other techniques to numerous problems in geometric optim ...

Keywords: clustering, collision detection, linear programming, matrix searching, parametric searching, proximity problems, prune-and-search, randomized algorithms

9   Model-based recognition in robot vision
Roland T. Chin, Charles R. Dyer
March 1986 **ACM Computing Surveys (CSUR)**, Volume 18 Issue 1

Full text available: pdf(4.94 MB)   Additional Information: full citation, abstract, references, citings, index terms, review

This paper presents a comparative study and survey of model-based object-recognition algorithms for robot vision. The goal of these algorithms is to recognize the identity, position, and orientation of randomly oriented industrial parts. In one form this is commonly referred to as the "bin-picking" problem, in which the parts to be recognized are presented in a jumbled bin. The paper is organized according to 2-D, 2½-D, and 3-D object representations, which are used as the basis for ...

10 Content analysis: A mid-level representation framework for semantic sports video analysis
Ling-Yu Duan, Min Xu, Tat-Seng Chua, Qi Tian, Chang-Sheng Xu
November 2003 **Proceedings of the eleventh ACM international conference on Multimedia**

Full text available: pdf(1.42 MB)   Additional Information: full citation, abstract, references, index terms

Sports video has been widely studied due to its tremendous commercial potentials. Despite encouraging results from various specific sports games, it is almost impossible to extend a system for a new sports game because they usually employ different sets of low-level features appropriate for the specific games and closely coupled with the use of game specific rules to detect events or highlights. There is a lack of internal representation and structure to be generic and applicable for many differ ...

Keywords: events, mid-level representation, semantics, sports video

11 A survey on wavelet applications in data mining

Tao Li, Qi Li, Shenghuo Zhu, Mitsunori Ogihara
December 2002 **ACM SIGKDD Explorations Newsletter**, Volume 4 Issue 2

Full text available: pdf(330.06 KB)   Additional Information: full citation, abstract, references, citings

Recently there has been significant development in the use of wavelet methods in various data mining processes. However, there has been written no comprehensive survey available on the topic. The goal of this is paper to fill the void. First, the paper presents a high-level data-mining framework that reduces the overall process into smaller components. Then applications of wavelets for each component are reviewd. The paper concludes by discussing the impact of wavelets on data mining research an ...

12 Radiance interpolants for accelerated bounded-error ray tracing

Kavita Bala, Julie Dorsey, Seth Teller
July 1999 **ACM Transactions on Graphics (TOG)**, Volume 18 Issue 3

Full text available: pdf(888.58 KB)   Additional Information: full citation, abstract, references, citings, index terms, review

Ray tracers, which sample radiance, are usually regarded as offline rendering algorithms that are too slow for interactive use. In this article we present a system that exploits object-space, ray-space, image-space, and temporal coherence to accelerate ray tracing. Our system uses per-surface interpolants to approximate radiance both interactive and batch ray tracers. Our approach explicity decouples the two primary operations of a ray tracer—shading and visibility de ...

Keywords: 4D interpolation, approximation, data structures, error bounds, interactive, interval arithmetic, radiance, rendering, rendering systems, visibility

13 Three-dimensional object recognition

Paul J. Besl, Ramesh C. Jain
March 1985 **ACM Computing Surveys (CSUR)**, Volume 17 Issue 1

Full text available: pdf(7.76 MB)   Additional Information: full citation, abstract, references, citings, index terms, review

A general-purpose computer vision system must be capable of recognizing three-dimensional (3-D) objects. This paper proposes a precise definition of the 3-D object recognition problem, discusses basic concepts associated with this problem, and reviews the relevant literature. Because range images (or depth maps) are often used as sensor input instead of intensity images, techniques for obtaining, processing, and characterizing range data are also surveyed.

14 Watermarking: The effects of invisible watermarking on satellite image classification

Gregory L. Heileman, Yunlong Yang
October 2003 **Proceedings of the 2003 ACM workshop on Digital rights management**

Full text available: pdf(1.46 MB)   Additional Information: full citation, abstract, references, citings, index terms

Remotely sensed satellite images are an important source of geographical data commonly used as input for various types of classification algorithms. For example, these algorithms are commonly used to classify earth land cover, analyze crop conditions, assess mineral and petroleum deposits, and quantify urban growth. Many vendors of digital images are using or are considering the use of invisible watermarking as a means of protecting their images from theft or unauthorized usage. Indeed, the use ...

Keywords: classification, content protection, information hiding, satellite imagery, watermarking

15 Surveillance: Video retrieval using spatio-temporal descriptors

Daniel DeMenthon, David Doermann

November 2003 **Proceedings of the eleventh ACM international conference on Multimedia**

Full text available: pdf(994.11 KB)   Additional Information: full citation, abstract, references, index terms

This paper describes a novel methodology for implementing video search functions such as retrieval of near-duplicate videos and recognition of actions in surveillance video. Videos are divided into half-second clips whose stacked frames produce 3D space-time volumes of pixels. Pixel regions with consistent color and motion properties are extracted from these 3D volumes by a threshold-free hierarchical space-time segmentation technique. Each region is then described by a high-dimensional point wh ...

Keywords: action recognition, content-based indexing and retrieval, object motion, space-time segmentation, spatio-temporal descriptors, video retrieval of near-duplicates

16 From coarse to fine skin and face detection

Hichem Sahbi, Nozha Boujemaa

October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Full text available: pdf(348.03 KB)   Additional Information: full citation, abstract, references, index terms

A method for fine skin and face detection is described that starts from a coarse color segmentation. Some regions represents parts of human skin and are selection by minimizing an error between the color distribution of each region and the output of a compression decompression neural network, which learns skin color distribution for several populations of different ethnicity. This ANN is used to find a collection of skin regions, which is used in a second learning step to provide parameters ...

Keywords: Bayesian classifier, color segmentation, face detection, image indexing, neural networks

17 Adaptive Hindi OCR using generalized Hausdorff image comparison

Huanfeng Ma, David Doermann

September 2003 **ACM Transactions on Asian Language Information Processing (TALIP)**, Volume 2 Issue 3

Full text available: pdf(280.45 KB)   Additional Information: full citation, abstract, references, index terms

We present an adaptive Hindi OCR implemented as part of a rapidly retargetable language tool effort. The system includes: script identification, character segmentation, training sample creation, and character recognition. In script identification, Hindi words are identified from bilingual or multilingual documents based on features of the Devanagari script or using Support Vector Machines. Identified words are then segmented into individual characters in the next step, where the composite charac ...

Keywords: Optical character recognition (OCR), document processing, generalized Hausdorff image comparison, script identification

18

Document and images analysis: INFTY: an integrated OCR system for mathematical documents

Masakazu Suzuki, Fumikazu Tamari, Ryoji Fukuda, Seiichi Uchida, Toshihiro Kanahori
November 2003 **Proceedings of the 2003 ACM symposium on Document engineering**
Full text available: 📄 pdf(322.41 KB)   Additional Information: full citation, abstract, references, index terms

An integrated OCR system for mathematical documents, called INFTY, is presented. INFTY consists of four procedures, i.e., layout analysis, character recognition, structure analysis of mathematical expressions, and manual error correction. In those procedures, several novel techniques are utilized for better recognition performance. Experimental results on about 500 pages of mathematical documents showed high character recognition rates on both mathematical expressions and ordinary texts, and suf ...

Keywords: character and symbol recognition, mathematical OCR, structure analysis of mathematical expressions

19 Query processing in a multimedia document system   ■
Elisa Bertino, Fausto Rabbiti, Simon Gibbs
January 1988 **ACM Transactions on Information Systems (TOIS)**, Volume 6 Issue 1
Full text available: 📄 pdf(2.94 MB)   Additional Information: full citation, abstract, references, citings, index terms, review

Query processing in a multimedia document system is described. Multimedia documents are information objects containing formatted data, text, image, graphics, and voice. The query language is based on a conceptual document model that allows the users to formulate queries on both document content and structure. The architecture of the system is outlined, with focus on the storage organization in which both optical and magnetic devices can coexist. Query processing and the different strategies ...

20 Document image understanding   ■
Sargur N. Srihari
November 1999 **Proceedings of 1986 ACM Fall joint computer conference**
Full text available: 📄 pdf(1.38 MB)   Additional Information: full citation, references, citings, index terms

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21 Progress in Picture Processing: 1969--71

Azriel Rosenfeld
June 1973 **ACM Computing Surveys (CSUR)**, Volume 5 Issue 2

Full text available: 📄 pdf(2.34 MB)   Additional Information: full citation, references, citings, index terms

22 Novelty and topic change: Domain-independent text segmentation using anisotropic diffusion and dynamic programming

Xiang Ji, Hongyuan Zha
July 2003 **Proceedings of the 26th annual international ACM SIGIR conference on Research and development in informaion retrieval**

Full text available: 📄 pdf(171.61 KB)   Additional Information: full citation, abstract, references, index terms

This paper presents a novel domain-independent text segmentation method, which identifies the boundaries of topic changes in long text documents and/or text streams. The method consists of three components: As a preprocessing step, we eliminate the *document-dependent* stop words as well as the generic stop words before the sentence similarity is computed. This step assists in the discrimination of the sentence semantic information. Then the cohesion information of sentences in a document o ...

Keywords: anisotropic diffusion, document-dependent stop words, dynamic programming, text segmentation

23 Algorithmic transformations in the implementation of K- means clustering on reconfigurable hardware

Mike Estlick, Miriam Leeser, James Theiler, John J. Szymanski
February 2001 **Proceedings of the 2001 ACM/SIGDA ninth international symposium on Field programmable gate arrays**

Full text available: 📄 pdf(255.95 KB)   Additional Information: full citation, abstract, references, citings, index terms

In mapping the k-means algorithm to FPGA hardware, we examined algorithm level transforms that dramatically increased the achievable parallelism. We apply the k-means algorithm to multi-spectral and hyper-spectral images, which have tens to hundreds of channels per pixel of data. K-means is an iterative algorithm that assigns assigns to each

pixel a label indicating which of K clusters the pixel belongs to.K-means is a common solution to the segmentation of multi ...

24 An integrated color-spatial approach to content-based image retrieval

Wynne Hsu, S. T. Chua, H. H. Pung

January 1995 **Proceedings of the third ACM international conference on Multimedia**

Full text available: ⊚ htm(38.02 KB)   Additional Information: full citation, references, citings, index terms

Keywords: color retrieval, content-based retrieval, image segmentation, spatial retrieval

25 Picture Processing by Computer

Azriel Rosenfeld

September 1969 **ACM Computing Surveys (CSUR)**, Volume 1 Issue 3

Full text available: 🅰 pdf(2.69 MB)   Additional Information: full citation, references, citings, index terms

26 Fast image retrieval using color-spatial information

Beng Chin Ooi, Kian-Lee Tan, Tat Seng Chua, Wynne Hsu

May 1998 **The VLDB Journal — The International Journal on Very Large Data Bases**,
Volume 7 Issue 2

Full text available: 🅰 pdf(496.55 KB)   Additional Information: full citation, abstract, index terms

In this paper, we present an image retrieval system that employs both the color and spatial information of images to facilitate the retrieval process. The basic unit used in our technique is a *single-colored cluster*, which bounds a homogeneous region of that color in an image. Two clusters from two images are similar if they are of the same color and overlap in the image space. The number of clusters that can be extracted from an image can be very large, and it affects the accuracy of ret ...

Keywords: Color-spatial information, Content-based retrieval, Sequenced multi-attribute tree, Single-colored cluster

27 CVEPS - a compressed video editing and parsing system

Jianhao Meng, Shih-Fu Chang

February 1997 **Proceedings of the fourth ACM international conference on Multimedia**

Full text available: 🅰 pdf(1.38 MB)   Additional Information: full citation, references, citings, index terms

28 Face recognition: A literature survey

W. Zhao, R. Chellappa, P. J. Phillips, A. Rosenfeld

December 2003 **ACM Computing Surveys (CSUR)**, Volume 35 Issue 4

Full text available: 🅰 pdf(4.28 MB)   Additional Information: full citation, abstract, references, index terms

As one of the most successful applications of image analysis and understanding, face recognition has recently received significant attention, especially during the past several years. At least two reasons account for this trend: the first is the wide range of commercial and law enforcement applications, and the second is the availability of feasible technologies after 30 years of research. Even though current machine recognition systems have reached a certain level of maturity, their success is ...

Keywords: Face recognition, person identification

29 <u>Voronoi diagrams—a survey of a fundamental geometric data structure</u>

Franz Aurenhammer

September 1991 **ACM Computing Surveys (CSUR)**, Volume 23 Issue 3

Full text available: pdf(5.18 MB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Keywords: cell complex, clustering, combinatorial complexity, convex hull, crystal structure, divide-and-conquer, geometric data structure, growth model, higher dimensional embedding, hyperplane arrangement, k-set, motion planning, neighbor searching, object modeling, plane-sweep, proximity, randomized insertion, spanning tree, triangulation

30 <u>Special issue on ICML: Coupled clustering: a method for detecting structural correspondence</u>

Zvika Marx, Ido Dagan, Joachim M. Buhmann, Eli Shamir

March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available: pdf(967.15 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>index terms</u>

This paper proposes a new paradigm and a computational framework for revealing equivalencies (analogies) between sub-structures of distinct composite systems that are initially represented by unstructured data sets. For this purpose, we introduce and investigate a variant of traditional data clustering, termed *coupled clustering*, which outputs a configuration of corresponding subsets of two such representative sets. We apply our method to synthetic as well as textual data. Its achievement ...

31 <u>An efficient core-area detection algorithm for fast noise-free image query processing</u>

Khanh Vu, Kien A. Hua, Duc A. Tran

March 2001 **Proceedings of the 2001 ACM symposium on Applied computing**

Full text available: pdf(461.28 KB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Keywords: content-based image retrieval, core-area detection algorithm, indexing/retrieval, noise-free queries

32 <u>Image-based objects</u>

Manuel M. Oliveira, Gary Bishop

April 1999 **Proceedings of the 1999 symposium on Interactive 3D graphics**

Full text available: pdf(1.04 MB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

Keywords: 3-D warp, image-based objects, image-based rendering

33 <u>OPTICS: ordering points to identify the clustering structure</u>

Mihael Ankerst, Markus M. Breunig, Hans-Peter Kriegel, Jörg Sander

June 1999 **ACM SIGMOD Record , Proceedings of the 1999 ACM SIGMOD international conference on Management of data**, Volume 28 Issue 2

Full text available: pdf(1.77 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index</u>

<u>terms</u>

Cluster analysis is a primary method for database mining. It is either used as a stand-alone tool to get insight into the distribution of a data set, e.g. to focus further analysis and data processing, or as a preprocessing step for other algorithms operating on the detected clusters. Almost all of the well-known clustering algorithms require input parameters which are hard to determine.but have a significant influence on the clustering result. Furthermore, for many real-data sets there doe ...

Keywords: cluster analysis, database mining, visualization

34 <u>A JPEG codec adaptive to region importance</u>
Jiying Zhao, Yoshihisa Shimazu, Koji Ohta, Rina Hayasaka, Yutaka Matsushita
February 1997 **Proceedings of the fourth ACM international conference on Multimedia**

Full text available: <u>pdf(1.47 MB)</u>   Additional Information: <u>full citation</u>, <u>references</u>, <u>index terms</u>

Keywords: JPEG, adaptive codec, fuzzy reasoning, human visual system, region importance

35 <u>Special issue on Machine learning methods for text and images: Matching words and pictures</u>
Kobus Barnard, Pinar Duygulu, David Forsyth, Nando de Freitas, David M. Blei, Michael I. Jordan
March 2003 **The Journal of Machine Learning Research**, Volume 3

Full text available: <u>pdf(789.04 KB)</u>   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>citings</u>, <u>index terms</u>

We present a new approach for modeling multi-modal data sets, focusing on the specific case of segmented images with associated text. Learning the joint distribution of image regions and words has many applications. We consider in detail predicting words associated with whole images (auto-annotation) and corresponding to particular image regions (region naming). Auto-annotation might help organize and access large collections of images. Region naming is a model of object recognition as a process ...

36 <u>Hierarchical mesh decomposition using fuzzy clustering and cuts</u>
Sagi Katz, Ayellet Tal
July 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 3

Full text available: <u>pdf(3.89 MB)</u>   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>

Cutting up a complex object into simpler sub-objects is a fundamental problem in various disciplines. In image processing, images are segmented while in computational geometry, solid polyhedra are decomposed. In recent years, in computer graphics, polygonal meshes are decomposed into sub-meshes. In this paper we propose a novel hierarchical mesh decomposition algorithm. Our algorithm computes a decomposition into the *meaningful components* of a given mesh, which generally refers to segment ...

Keywords: control-skeleton extraction, mesh decomposition, mesh segmentation

37 <u>Learnable visual keywords for image classification</u>
Joo-Hwee Lim
August 1999 **Proceedings of the fourth ACM conference on Digital libraries**

Full text available: <u>pdf(380.75 KB)</u>   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

38 Image Categorization by Learning and Reasoning with Regions

Yixin Chen, James Z. Wang

August 2004 **The Journal of Machine Learning Research**, Volume 5

Full text available: pdf(1.31 MB)   Additional Information: full citation, abstract

> Designing computer programs to automatically categorize images using low-level features is a challenging research topic in computer vision. In this paper, we present a new learning technique, which extends Multiple-Instance Learning (MIL), and its application to the problem of region-based image categorization. Images are viewed as bags, each of which contains a number of instances corresponding to regions obtained from image segmentation. The standard MIL problem assumes that a bag is labeled p ...

39 A multimodal learning interface for grounding spoken language in sensory perceptions

Chen Yu, Dana H. Ballard

July 2004 **ACM Transactions on Applied Perception (TAP)**, Volume 1 Issue 1

Full text available: pdf(1.73 MB)   Additional Information: full citation, abstract, references, index terms

> We present a multimodal interface that learns words from natural interactions with users. In light of studies of human language development, the learning system is trained in an unsupervised mode in which users perform everyday tasks while providing natural language descriptions of their behaviors. The system collects acoustic signals in concert with user-centric multisensory information from nonspeech modalities, such as user's perspective video, gaze positions, head directions, and hand moveme ...

> **Keywords**: Multimodal learning, cognitive modeling, multimodal interaction

40 Special issue on spatial database systems: A semantic modeling approach for image retrieval by content

Wesley W. Chu, Ion T. Ieong, Ricky K. Taira

October 1994 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 3 Issue 4

Full text available: pdf(1.68 MB)   Additional Information: full citation, abstract, references, citings

> We introduce a semantic data model to capture the hierarchical, spatial, temporal, and evolutionary semantics of images in pictorial databases. This model mimics the user's conceptual view of the image content, providing the framework and guidelines for preprocessing to extract image features. Based on the model constructs, a spatial evolutionary query language (SEQL), which provides direct image object manipulation capabilities, is presented. With semantic information captured in the model, spa ...

> **Keywords**: image, medical, multimedia databases, spatial query processing, temporal evolutionary query processing

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Terms used **image segmentation** and **cluster** and **detect** and **preprocess**

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41 Interactive control of avatars animated with human motion data   ■

Jehee Lee, Jinxiang Chai, Paul S. A. Reitsma, Jessica K. Hodgins, Nancy S. Pollard
July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: 🗋 pdf(8.00 MB)   Additional Information: full citation, abstract, references, citings, index terms

Real-time control of three-dimensional avatars is an important problem in the context of computer games and virtual environments. Avatar animation and control is difficult, however, because a large repertoire of avatar behaviors must be made available, and the user must be able to select from this set of behaviors, possibly with a low-dimensional input device. One appealing approach to obtaining a rich set of avatar behaviors is to collect an extended, unlabeled sequence of motion data appropria ...

Keywords: avatars, human motion, interactive control, motion capture, virtual environments

42 Algorithms: Significant facet retrieval for real-time 3D sound rendering in complex virtual environments   ■

Chris Joslin, Nadia Magnenat-Thalmann
October 2003 **Proceedings of the ACM symposium on Virtual reality software and technology**

Full text available: 🗋 pdf(367.63 KB)   Additional Information: full citation, abstract, references, index terms

Sound rendering requires that many different aspects are considered simultaneously, especially when rendering a real-time virtual environment. In 3D sound rendering, much the same as for graphics, one of the major influencing factors is the number of reflective polygons in a scene and due to the increase in the ability of most common graphics cards this number can now be very high, especially when scene designers produce an optimum scene using other optimizing tools such as Polygon Cruncher or R ...

Keywords: bounding-box, scene segmentation, sound rendering, virtual environments

43 Extending case-based reasoning by discovering and using image features in IVF   ■

Igor Jurisica, Janice Glasgow

March 2000 **Proceedings of the 2000 ACM symposium on Applied computing**
Full text available: 📄 pdf(862.40 KB)   Additional Information: full citation, references, index terms

Keywords: case-based and image-based reasoning, image-feature extraction, in-vitro fertilization (IVF), knowledge discovery

44 Automatic text recognition for video indexing   ■
Rainer Lienhart
February 1997 **Proceedings of the fourth ACM international conference on Multimedia**
Full text available: 📄 pdf(1.15 MB)   Additional Information: full citation, references, citings, index terms

Keywords: OCR, character recognition, character segmentation, video content analysis, video indexing, video processing

45 Modeling focus of attention for meeting indexing   ■
Rainer Stiefelhagen, Jie Yang, Alex Waibel
October 1999 **Proceedings of the seventh ACM international conference on Multimedia (Part 1)**
Full text available: 📄 pdf(1.94 MB)   Additional Information: full citation, references, citings, index terms

46 Visibility sorting and compositing without splitting for image layer decompositions   ■
John Snyder, Jed Lengyel
July 1998 **Proceedings of the 25th annual conference on Computer graphics and interactive techniques**
Full text available: 📄 pdf(591.53 KB)   Additional Information: full citation, references, citings, index terms

Keywords: compositing, kd-tree, nonsplitting layered decomposition, occlusion cycle, occlusion graph, sprite, visibility sorting

47 Projective and view-dependent textures: GigaWalk: interactive walkthrough of complex   ■
environments
William V. Baxter, Avneesh Sud, Naga K. Govindaraju, Dinesh Manocha
July 2002 **Proceedings of the 13th Eurographics workshop on Rendering**
Full text available: 📄 pdf(4.81 MB)   Additional Information: full citation, abstract, references, citings

We present a new parallel algorithm and a system, GigaWalk, for interactive walkthrough of complex, gigabyte-sized environments. Our approach combines occlusion culling and levels-of-detail and uses two graphics pipelines with one or more processors. GigaWalk uses a unified scene graph representation for multiple acceleration techniques, and performs spatial clustering of geometry, conservative occlusion culling, and load-balancing between graphics pipelines and processors. GigaWalk has been use ...

Keywords: engineering visualization, interactive display systems, levels-of-detail, occlusion culling, parallel rendering

48 The Quadtree and Related Hierarchical Data Structures
Hanan Samet
June 1984 **ACM Computing Surveys (CSUR)**, Volume 16 Issue 2
Full text available: pdf(4.87 MB)   Additional Information: full citation, references, citings, index terms

49 Meeting experience: Experiential meeting system
Ramesh Jain, Pilho Kim, Zhao Li
November 2003 **Proceedings of the 2003 ACM SIGMM workshop on Experiential telepresence**
Full text available: pdf(388.84 KB)   Additional Information: full citation, abstract, references, index terms

We are developing experiential meeting systems to allow people to be tele-present in a remote meeting and to be able to review proceedings of a meeting or of several meetings using all the data recorded in a meeting. We consider this as a problem in management and experiential access to all multimedia data acquired in a meeting. The data includes video, audio, presentations, text material, databases and websites related to people and the discussions in the meeting, and any other data or informat ...

Keywords: data event, elemental event and domain event, event, event based data processing, experiential systems, meeting

50 Research track: Eliminating noisy information in Web pages for data mining
Lan Yi, Bing Liu, Xiaoli Li
August 2003 **Proceedings of the ninth ACM SIGKDD international conference on Knowledge discovery and data mining**
Full text available: pdf(468.87 KB)   Additional Information: full citation, abstract, references, index terms

A commercial Web page typically contains many information blocks. Apart from the main content blocks, it usually has such blocks as navigation panels, copyright and privacy notices, and advertisements (for business purposes and for easy user access). We call these blocks that are not the main content blocks of the page the noisy blocks. We show that the information contained in these noisy blocks can seriously harm Web data mining. Eliminating these noises is thus of great importance. In this pa ...

Keywords: Web mining, noise detection, noise elimination

51 Think globally, fit locally: unsupervised learning of low dimensional manifolds
Lawrence K. Saul, Sam T. Roweis
December 2003 **The Journal of Machine Learning Research**, Volume 4
Full text available: pdf(2.91 MB)   Additional Information: full citation, abstract, index terms

The problem of dimensionality reduction arises in many fields of information processing, including machine learning, data compression, scientific visualization, pattern recognition, and neural computation. Here we describe locally linear embedding (LLE), an unsupervised learning algorithm that computes low dimensional, neighborhood preserving embeddings of high dimensional data. The data, assumed to be sampled from an underlying manifold, are mapped into a single global coordinate system of lowe ...

52 AI and computational logic and image analysis (AI): Concatenate feature extraction for robust 3D elliptic object localization
Yuichi Motai, Akio Kosaka

March 2004 **Proceedings of the 2004 ACM symposium on Applied computing**

Full text available: pdf(371.28 KB)   Additional Information: full citation, abstract, references, index terms

Developing an efficient object localization system for complicated industrial objects is an important, yet difficult robotic task. To tackle this problem, we have developed a system consisting first of a vision model acquisition editor, where the object salient features are acquired through a human-in-the-loop approach. Subsequently, two feature extraction algorithms, region-growing and edge-grouping, are applied to the object scene. Finally, by Kalman filter estimation of a proper ellipse repre ...

Keywords: 3D robot vision system, Kalman filter estimation, elliptic edge grouping, human-in-the-loop segmentation, salient feature extraction

53 Comparing *in situ* *m*RNA expression patterns of *drosophila* embryos
Hanchuan Peng, Eugene W. Myers
March 2004 **Proceedings of the eighth annual international conference on Computational molecular biology**
Full text available: pdf(377.74 KB)   Additional Information: full citation, abstract, references, index terms

In situ staining of a target *m*RNA at several time points during the development of a D. *melanogaster* embryo gives one a detailed spatio-temporal view of the expression pattern of a given gene. We have developed algorithms and software for analyzing a database of such images with the goal of being able to identify coordinately expressed genes and further our understanding of *cis*-regulatory control during embryogenesis. Our approach combines measures of similarity at bo ...

Keywords: drosophila, embryogenesis, gaussian mixture model, gene expression, image matching, in situ hybridization

54 High performance clustering based on the similarity join
Christian Böhm, Bernhard Braunmüller, Markus Breunig, Hans-Peter Kriegel
November 2000 **Proceedings of the ninth international conference on Information and knowledge management**
Full text available: pdf(134.57 KB)   Additional Information: full citation, references, citings, index terms

Keywords: clustering, data mining, database primitives, multidimensional index structure, similarity join

55 MDM/KDD2002: multimedia data mining between promises and problems
Simeon J. Simoff, Chabane Djeraba, Osmar R. Zaïane
December 2002 **ACM SIGKDD Explorations Newsletter**, Volume 4 Issue 2

Full text available: pdf(105.37 KB)   Additional Information: full citation, abstract, references

This report presents a brief overview of multimedia data mining and the corresponding workshop series at ACM SIGKDD conference series on data mining and knowledge discovery. It summarizes the presentations, conclusions and directions for future work that were discussed during the 3rd edition of the International Workshop on Multimedia Data Mining, conducted in conjunction with KDD-2002 in Edmonton, Alberta, Canada.

Keywords: digital media, image content mining, knowledge discovery, multimedia data mining, multimedia databases, sound analysis, video analysis

56 Matching 2D patterns of protein spots
   Frank Hoffmann, Klaus Kriegel, Carola Wenk
   June 1998 **Proceedings of the fourteenth annual symposium on Computational
            geometry**
   Full text available: pdf(1.07 MB)   Additional Information: full citation, references, citings, index terms

57 Adaptive estimation of optical flow from general object motion
   Zhaoxin Pan, Joseph J. Pfeiffer
   April 1992 **Proceedings of the 1992 ACM/SIGAPP Symposium on Applied computing:
            technological challenges of the 1990's**
   Full text available: pdf(679.63 KB)   Additional Information: full citation, references, index terms

   Keywords: artificial intelligence, computer vision, image processing, motion detection,
   optical flow

58 Image retrieval, users and usability: A search engine for historical manuscript images
   Toni M. Rath, R. Manmatha, Victor Lavrenko
   July 2004 **Proceedings of the 27th annual international conference on Research and
            development in information retrieval**
   Full text available: pdf(346.95 KB)   Additional Information: full citation, abstract, references, index terms

   Many museum and library archives are digitizing their large collections of handwritten
   historical manuscripts to enable public access to them. These collections are only available
   in image formats and require expensive manual annotation work for access to them.
   Current handwriting recognizers have word error rates in excess of 50% and therefore
   cannot be used for such material. We describe two statistical models for retrieval in large
   collections of handwritten manuscripts given a text query. Bo ...

   Keywords: handwriting retrieval, historical manuscripts, relevance models

59 Searching in metric spaces
   Edgar Chávez, Gonzalo Navarro, Ricardo Baeza-Yates, José Luis Marroquín
   September 2001 **ACM Computing Surveys (CSUR)**, Volume 33 Issue 3

   Full text available: pdf(916.04 KB)   Additional Information: full citation, abstract, references, citings, index
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   The problem of searching the elements of a set that are close to a given query element
   under some similarity criterion has a vast number of applications in many branches of
   computer science, from pattern recognition to textual and multimedia information retrieval.
   We are interested in the rather general case where the similarity criterion defines a metric
   space, instead of the more restricted case of a vector space. Many solutions have been
   proposed in different areas, in many cases without cros ...

   Keywords: Curse of dimensionality, nearest neighbors, similarity searching, vector spaces

60 Computing curricula 2001
   September 2001 **Journal on Educational Resources in Computing (JERIC)**

   Full text available: pdf(613.63 KB)

html(2.78 KB)   Additional Information: full citation, references, citings, index terms

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1 6,768,918 T	Fluorescent fiberoptic probe for tissue health discrimination and method of use thereof
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3 5,987,094 T	Computer-assisted method and apparatus for the detection of lung nodules
4 5,982,917 T	Computer-assisted method and apparatus for displaying x-ray images
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